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10/714,309

11/14/2003

Nobuhiro Takeda

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EXAMINER

DURNFORD GESZVAIN, DILLON

ART UNIT

PAPER NUMBER

2622

MAIL DATE

DELIVERY MODE

06/29/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/714,309	Applicant(s) TAKEDA, NOBUHIRO	
	Examiner Dillon Durnford-Geszvain	Art Unit 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Claims **1-5** are pending, claim **1** is amended, and claim **5** is newly added.

Response to Arguments

2. Applicant's arguments filed 4/13/2009 have been fully considered but they are not persuasive.

Regarding claim **1**, Applicant argues that Wako does not teach performing a specific control during a storage period. (Remarks pp. 5-7). Specifically, the Applicant erroneously suggests that claim **1** recites "a driving circuit which, while the signal charges are stored ..." In fact, this limitation has been cancelled from claim **1** and replaced with significantly different language. The Applicant goes on to use this erroneous recitation of the limitations of claim **1** as the basis for arguing the merits of claim **1**. As far as the limitations of claim **1** as amended are somewhat similar to the cancelled limitation, the Examiner will attempt to respond to the Applicants arguments regarding this feature of claim **1**.

The Examiner respectfully disagrees. First, in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., performing a specific control during a storage period, as storage period is earlier defined by applicant in remarks) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re*

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Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

However, the claim does not call for a storage period as the Applicant has defined it. The claim only calls for stopping the horizontal transfer pulse, and resetting operation of the charge detection portion and clamping operation are continued while the signal charges are stored in the photoelectric conversion portion. Wako clearly teaches stopping the horizontal transfer pulses (all times other than t3 to t4 of Fig. 5) and performing other operations (such as charges that might cause smear being read out and drained, C11 L20-33) while charges are being stored in the photoelectric conversion portion (charge is continuously accumulated in the photoelectric conversion areas 15 and are only released when a read pulse is fed to gates 25, C5 L53-62).

Therefore, the rejection will maintained as to that aspect of the claims.

3. Applicant's arguments with respect to the limitation in claim **1** of an OB clamp circuit have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims **1-5** rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claim **1** recites the limitation "the charge detection portion" in the first line on page 3 of the amendment submitted 4/13/2009. There is insufficient antecedent basis

for this limitation in the claim.

The claim further recites the limitation “the photoelectric conversion portion” in the second line of page 3, and this also lacks antecedent basis, and it is unclear if the photoelectric conversion portion is something different than the photoelectric conversion region recited earlier in the claim. The Examiner will assume that the portion and region are one and the same.

Claim **1** also recites that the clamping operation of the OB clamping circuit is continued while the signal charges are stored in the photoelectric conversion portion and no transfer pulses are being supplied to the horizontal transfer portion. However, this is confusing because it seems from the claim that the clamping operation of the OB clamping circuit consists of clamping an OB signal output from the optical black region to a reference voltage, and if there are no horizontal transfer pulses, then no values can be read into the OB clamping circuit and it couldn't perform its clamping function.

7. Claims **2-5** recite the limitation “the unnecessary charges”. There is insufficient antecedent basis for the limitation in the claims and the Examiner will assume that the limitation refers to any and all unnecessary charges and not any specified unnecessary charges.

8. Claims **2-5** are also indefinite because they depend from a claim that is indefinite.

Claim Objections

9. Claim **1** is objected to because of the following informalities: the claim recites the limitation “wherein the image sensing element having a photoelectric conversion

region." This limitation is written in language that makes it hard to understand. Writing a limitation such as "wherein the x having a y" makes it sound like a previously recited limitation is being referred to, however, in this case the limitation is being used to add details about the previously recited limitation. It seems that the wherein is superfluous and should be omitted. The same language is used near the bottom of page 2 in describing the OB clamping circuit.

In line 4 "a photoelectric conversion region which generates and storing signal charges of an object" should be --a photoelectric conversion region which generates and **stores** signal charges of an object--.

In lines 5-6 the claim recites the limitation "by shielding a part of the photoelectric conversion elements from light." This makes it sound like half of a photoelectric conversion element is shielded, when in fact, it is entire photoelectric conversion elements making up a portion of the image sensing element that are shielded.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

10. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

11. **Claims 1 and 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 7,050,101 (Wako) in view of US 2001/0055068 (Funakoshi).**

12. As to claim 1, Wako teaches Wako teaches an image sensing apparatus (see Fig. 1) comprising:

an image sensing element 100 at which a plurality of photoelectric conversion elements (15) are two-dimensionally arrayed (Fig. 1), the image sensing element having a photoelectric conversion region which generates and stores signal charges of an object (Fig. 1), an optical black region (not shown) which outputs an optical black signal by shielding a part of the photoelectric conversion elements from light (not shown, discussed at C11 L20-33), a vertical transfer portion 20 which vertically transfers the signal charges stored in the photoelectric conversion portion in accordance with a vertical transfer pulse (C5 L19-52), a horizontal transfer portion 30 which horizontally transfers the signal charges transferred from the vertical transfer portion in accordance with a horizontal transfer pulse (C6 L12-65), a horizontal drain portion 51 which drains charges overflowing from the horizontal transfer portion (C7 L10-36), and a charge detection portion 40 which converts the signal charges transferred from the horizontal transfer portion 30 into a signal voltage (C6 L66-C7 L9).

What Wako does not explicitly teach is an OB clamping circuit which clamps the optical black signal output from the optical black region to a reference voltage, wherein the OB clamping circuit has a switch which inputs a reference voltage from a reference power supply, and a capacitor, and

when no horizontal transfer pulses are provided to the horizontal transfer portion, a resetting operation of the charge detection portion and clamping operation of the OB clamping circuit are continued while the signal charges are stored in the photoelectric conversion portion.

However, Funakoshi teaches an OB clamping circuit 3 (Fig. 8) which clamps the

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optical black signal outputted from an optical black region of a CCD to a reference voltage [0050], the OB clamping circuit 3 having a switch 15 (Fig. 9) which inputs the reference voltage from a reference power supply (V_{cc} , [0052]), and

when signals are not being outputted the OB acts as a feedback amplifier ([0053]), which the Examiner interprets to be equivalent to the resetting of the charge detection portion and clamping operation.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the OB clamping circuit of Funakoshi in the apparatus of Wako where the OB clamping circuit is operated as described in [0053] of Funakoshi when the horizontal transfer pulse of Wako is not being supplied as this would allow for the correction of noise in the combined apparatus of Wako in view of Funakoshi.

13. As to claim **3**, see the rejection of claim **1** and note that Wako further teaches the apparatus of claim **1**, wherein while the signal charges are stored in the photoelectric conversion portion, the vertical transfer portion is driven at high speed to drain the unnecessary charges generated at the vertical transfer portion of said image sensing element (C12 L14-20).

14. As to claim **4**, see the rejection of claim **1** and note that Wako further teaches the apparatus of claim **1**, wherein while the signal charges are stored in the photoelectric conversion portion, potentials of the vertical transfer portion is set to the same potential

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to drain the unnecessary charges generated at the vertical transfer portion of said image sensing element (Fig. 5 and C12 L14-20 of Wako).

15. As to claim **5**, see the rejection of claim **1** and note that Wako further teaches a driving circuit (not shown, but supplies signal ϕ_{DR}) configured to drain unnecessary charges generated at the vertical transfer (such as smear charges) of said sensing element through the horizontal drain portion 51 if the unnecessary charges are transferred over a tolerance of the horizontal transfer portion (C11 L20-33 and note that the tolerance of the horizontal transfer portion here is the voltage of ϕ_{DR} that allows the unnecessary charges to drain).

16. **Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 7,050,101 (Wako) in view of US 2001/0055068 (Funakoshi) further in view of US 6,476,941 (Kondo).**

17. As to claim **2**, see the rejection of claim **1** and note that Wako in view of Funakoshi teaches the apparatus of claim **1**, wherein the horizontal drain portion 51 (of Wako) which drains unnecessary charges is arranged adjacent to the horizontal transfer portion 30 in a vertical direction of the horizontal transfer portion (Fig. 1 of Wako). What neither Wako nor Funakoshi teach is that when the unnecessary charges generated at the vertical transfer portion of said image sensing element reaches a predetermined amount at the horizontal transfer portion, the unnecessary charges are drained through the horizontal drain portion.

However, Kondo teaches an imager with a horizontal drain region for draining unnecessary charges only if the unnecessary charges exceed a tolerance of the horizontal transfer portion (C14 L5-16) and when the unnecessary charges generated at the vertical transfer portion of said image sensing element reaches a predetermined amount at the horizontal transfer portion, the unnecessary charges are drained through the horizontal drain portion (the tolerance or capacitance of the horizontal transfer portion, Kondo C14 L5-16). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have only transferred charges that exceeded a tolerance of the horizontal transfer portion when the unnecessary charges generated at the vertical transfer portion of said image sensing element reaches a predetermined amount at the horizontal transfer portion, the unnecessary charges are drained through the horizontal drain portion, as is done in Kondo, in the image capture apparatus of Wako as this would allow for lower voltages to be used than the high drain potential of 33 V used in Wako.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dillon Durnford-Geszvain whose telephone number is (571)272-2829. The examiner can normally be reached on Monday through Friday 8 am to 5 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DDG/

6/26/2009

/David L. Ometz/

Supervisory Patent Examiner, Art Unit 2622